Hydrol. Earth Syst. Sci. Discuss.,
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Interactive comment on "Using StorAge Selection functions to quantify ecohydrological controls on the time-variant age of evapotranspiration, soil water, and recharge" *by* Aaron A. Smith et al.

Anonymous Referee #2

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From the initial response, I am not sure whether the author can revise the manuscript to address the raised issues. Apparently, the authors just want to use the Craig-Gordon model (isotopic model) as a black box, and think that testing the model structure is just secondary to the goals of their study. The authors understand that the selection of distribution is important for their proposed method. They said, 'The use of a beta distribution for evaporation and root-uptake (Equations 13&14) is necessary due to the confined soil depth simulated. The use of a gamma distribution for either flux results in selection of deeper soil water (and isotopic compositions) which were not simulated.' However, it seems that they don't want to show how different distributions for evaporation and root-uptake will affect their results. If the authors do not test and

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Discussion paper

evaluate their models, I am afraid that the whole time-variant age results can be some unreliable artefacts based on a poor model structure and problematic assumptions. I like this work but a good model evaluation is needed.

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